In the claims:

1. (Original) A method of root-canal photo-sterilizing, comprising:

forming an opening into the pulp chamber of a tooth;

removing the pulp from at least one infected root canal of said tooth;

cleaning the walls of said at least one root canal; and

photo-sterilizing said walls, by shining on them with light at a combination of wavelength and intensity operative to disinfect said walls.

2-26. (Canceled)

27. (Original) A method of performing post-endodontic photo-sterilization of a root canal, comprising:

forming an opening into the pulp chamber of a tooth;

removing the pulp from at least one infected root canal of said tooth;

cleaning and shaping the walls of said at least one root canal;

filling said at least one root canal with a filling substance which comprises at least one light-transmitting element, in communication with said walls;

restoring said tooth; and

performing post-endodontic photo-sterilization of said root canal, by coupling a light source, at a combination of wavelength and intensity operative to disinfect said walls, with said at least one light-transmitting element.

28-56. (Canceled)

57. (Original) A substance, operative as a light-transmitting sealer in a tooth filling, formed as a mixture, comprising:

an adhesive, selected from the group consisting of silicone polymers, silica, silicate, and a combination thereof; and

a filler, selected from the group consisting of fumed silica, quartz particles, barium sulfate, ring-opening polymers, and a combination thereof,

wherein said mixture comprises between 2% and 50 % of said filler.

58. (Original) An endodontic diffuser, adapted in size and shape to be inserted into at least one root canal, for transmitting light by diffusion, for photo-sterilization of said root canal.

59. (Original) The endodontic diffuser of claim 58, formed of a material selected from the group consisting of silicone polymers, synthetic fused silica, quartz, poly-olefins, none-crystalline polyolefin, and a combination thereof.

60. (Original) The endodontic diffuser of claim 58, wherein said at least diffuser is formed of a light-transmitting shell and a fluid enclosed therein.

61. (Original) The endodontic diffuser of claim 60, wherein said light-transmitting shell is flexible.

62. (Original) The endodontic diffuser of claim 60, wherein said light-transmitting shell is formed of a polymer.

63. (Currently Amended) The endodontic diffuser of claim 60, wherein said light-transmitting shell is formed of Cyclic Olefin Copolymers (COC).

64. (Original) The endodontic diffuser of claim 60, wherein said light-transmitting shell is formed of COC 8007 Hi UV.

65. (Original) The endodontic diffuser of claim 60, wherein said light-transmitting shell is between 0.1 and 0.3 mm thick.

66. (Original) The endodontic diffuser of claim 60, wherein said fluid is selected from the group consisting of air, water and oil.

67. (Original) The endodontic diffuser of claim 60, wherein said shell is adapted to couple with an optical fiber by fitting around said optical fiber and gluing thereto.

68. (Original) The endodontic diffuser of claim 60, wherein said shell is adapted to couple with an optical fiber by tightly fitting around said optical fiber, for a quick connection.

69. (Original) The endodontic diffuser of claim 60, wherein a surface of said optical fiber, which forms contact with said fluid, is machined to form a lens, for improved light diffusion.

70. (Original) The endodontic diffuser of claim 60, wherein said diffuser is sealed with a plug, for insertion into a root canal, and further wherein said diffuser may be unplugged by inserting a hyperdemic needle through said plug, and pressurizing said diffuser, thus causing said plug to pop out, for performing said post-endodontic photo-sterilization of said root canal.

71. (Original) The endodontic diffuser of claim 58, having a length of between 8 and 25 mm in length.

72. (Original) The endodontic diffuser of claim 58, shaped generally as a cylindrical cone, and having a proximal diameter with respect to a crown of said tooth of between 0.5 and 2.0 mm.

73. (Original) The endodontic diffuser of claim 58, comprising two branches.

74. (Original) The endodontic diffuser of claim 58, comprising three branches.

75. (Original) The endodontic diffuser of claim 58, comprising four branches.

76. (Original) The endodontic diffuser of claim 58, formed as a plurality of optical fibers of different lengths, held together with a light transmitting sealant.

77. (Original) The endodontic diffuser of claim 58, comprising a plurality of surface pits whose diameters increase along the length of said diffuser, from between about 0.03 and about 0.05 mm in diameter, at a proximal end, with respect to the crown of said tooth, to between about 0.08 and about 0.15 mm in diameter, at a distal end, for providing a generally even light intensity on said walls.

78. (Original) The endodontic diffuser of claim 58, comprising a plurality of surface channels whose widths increase along the length of said diffuser, from between about 0.10 and about 0.15 mm, at a proximal end, with respect to the crown of said tooth, to between about 0.20 and about 0.30 mm, at a distal end, for providing a generally even light intensity on said walls.

79. (Original) The endodontic diffuser of claim 58, comprising a light coupler.

80. (Original) The endodontic diffuser of claim 58, comprising an optical-grade surface at a proximal end with respect the crown of said tooth.

81. (Original) The endodontic diffuser of claim 80, comprising a removable cap, for protecting said optical-grade surface.

82. (Original) A ring-shaped diffuser, adapted in size and shape to be inserted at an interface between a restored crown and a dentine tissue of a tooth, for transmitting light by diffusion, for photo-sterilization of said interface.

83. (Original) The ring-shaped diffuser of claim 82, formed of a material selected from the group consisting of silicone polymers, synthetic fused silica, quartz, poly-olefins, none-crystalline polyolefin, and a combination thereof.

84-142. (Canceled)